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ABSTRACT

The Golden Section, also known as the "Golden Mean" and the "Divine Proportion," is a ratio found in art and nature that has mathematical properties. This book explores these geometric and algebraic properties in a variety of activities. Construction problems, designs using the pentagon and pentagram, and opportunities to work through proofs are presented for students who have some background in secondary school geometry. The book is organized into eleven sections and four appendices. For maximum benefit students should work through the sections in sequence. Sections include: (1) "What Is the Golden Section?"; (2) "Constructing the Golden Section"; (3) "The Regular Pentagon and Its Relationship to the Golden Section"; (4) "The Algebraic Representation of the Golden Section"; (5) "More on the Pentagon's Relationship to Tau"; (6) "Progressions, Pentagons, and Pentagrams"; (7) "Golden Rectangles"; (8) "Rabbits and Rectangles"; (9) "A Puzzling Situation"; (10) "Dynamic Symmetry"; and (11) "The Golden Section in Nature." Appendices A through D contain alternative constructions, activities, and problems. Answers to problems are given. The book concludes with a bibliography and index. (MM)

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